CROP INSURANCE
WHAT IS IT?
SHOULD I BUY IT?

Alberta
AGRICULTURE
FARM BUSINESS MANAGEMENT BRANCH
AGDEX 838-6

PLEASE NOTE

This publication contains a discussion of the characteristics of crop insurance programs of Canada-Alberta Crop Insurance. The purpose of the publication is to provide information to assist you in making your own crop insurance decisions. It is not intended that you rely on this material for any other purpose.

The example situations discussed illustrate the way crop insurance premiums, coverage levels and losses are calculated. The results of any analysis within the publication are unique to the example situation and are provided only as a guideline for you to follow.

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PREPARED BY:

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FINANCIAL MANAGEMENT SECTION

Alberta
AGRICULTURE
Farm Business
Management Branch

MARCH, 1985

PREFACE

Dealing with risk is part of the business of farming. Risk presents itself in many forms - fluctuating market prices, increasing inputs and their cost, rapid changes in technology - just to mention a few examples. Natural weather conditions have always been an integral part of farming but the risk it represents is changing. This is because modern farms are heavily capitalized, incorporate new and often expensive technology, and are operating with narrow profit margins. As a result the risk that unfavorable weather conditions represent has become larger.

Crop insurance is one way that farmers can reduce this risk. Even so, many specific questions must be answered. To what extent is the risk reduced? How do the insurance options relate to one's risk? Is the premium representative to the benefit of the insurance?

This publication has been prepared to assist readers in developing their own answers to these questions. Programs of the Alberta Hail and Crop Insurance Corporation are reviewed. Examples of loss-claims and how they are calculated are presented. A discussion of the cost-benefit relationship of insurance to premium rates is provided. With this background, formulas and worksheets have been designed that assist producers in estimating the benefit of the insurance. Computer programs that perform these calculations are also available.

A single example situation is frequently referred to throughout the publication. It is important to note that the example relates specific information about premium coverage that is unique to the situation the example portrays. Producers are advised that these rates and coverages are different for each farming situation, differ from one risk area to another, and are subject to change from year to year. District offices of Alberta Hail and Crop Insurance will be able to provide the information that relates to your risk area and situation. A list of the district offices is provided in Appendix C.

The material for this publication was prepared by Douglas Duff, under the direction of Harry Warne, P. Ag., Financial Management Section, Farm Business Management Branch. Grateful acknowledgement is expressed to Dr. Len Bauer, Department of Rural Economy, University of Alberta, Mr. Ed Patching, General Manager, Alberta Hail and Crop Insurance Corporation, and Mr. Rod Raines, Alberta Hail and Crop Insurance Corporation for their assistance in the project and review of the publication.

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INTRODUCTION

Farming could be described as a pretty "iffy" business -"if" there's enough rain and sunshine; "if" it doesn't freeze or hail; "if" the crop isn't snowed under...

Unfortunately, there's more to producing crops than good management alone. The direct effect of nature on agricultural production is a major factor. Being unable to forecast what conditions will prevail results in a great amount of risk, which the producer must deal with.

Today's farm businesses are generally highly mechanized, use more technological innovations than ever before and operate with large amounts of capital. While productivity has increased as a result, there is little doubt that this advantage has been gained at no small cost. As well, the highly competitive market situation means that producers are faced with narrow profit margins. These conditions seem to indicate that farm businesses are, by choice or necessity, acquiring greater amounts of risk.

What are some ways that farmers can deal with this situation? Strategies would normally include a combination of production, marketing and financial considerations. Methods are: enterprise diversification, the use of drought and disease-resistant varieties, hedging and forward contracting, and leasing versus buying. Crop insurance is another option, and this publication will deal with how it can be used to reduce production risk.

The crop insurance purchasing issue however, requires some study and analysis in order to answer questions and concerns about crop insurance. What crops can be insured and what are the insurance conditions? How are coverage levels determined? When is a producer in a claim position? What is a loss-to-premium ratio? What is Individual Coverage and is it better than the Basic Crop Insurance Policy? Furthermore, farmers are required to choose between various levels of coverage and price options that command different premium rates. Decisions must be made as to what crops to insure and whether to use the Hail Endorsement.

In addition, comments such as "I've been buying insurance for the last 10 years and haven't got back a nickle yet!", or "The coverage yields are too low. We'd go broke at their production levels!", are relatively common complaints. Such criticisms lead to some important questions. Is the crop insurance program a good one? Does it meet the needs of individual farmers? Can farmers afford to be without crop insurance, or is it just another cropping expense? The significance of these questions becomes more important as governments tend to support insurance plans rather than provide ineffective and costly disaster assistance. As well, many lending institutions are encouraging or requiring their clients to insure their crops.

This publication is intended to acquaint the reader with the crop insurance programs in Alberta. The various policies and features of the Alberta Hail and Crop Insurance Corporation will be reviewed and illustrated. In addition, an approach for assessing the cost-benefit relationship of crop insurance programs will be presented.

WHAT IS INSURANCE?

The risk farmers face with respect to crop production as a result of the influence of nature can be dealt with in a number of ways. Examples are: using strategies such as sowing early-maturing varieties or the application of herbicides and pesticides. Another strategy would be to accumulate funds during good years to offset seasons of poor production. Measures such as these are considered as forms of **self-insurance**.

Allocating money to a self-insurance fund requires a considerable amount of discipline, and several factors must be defined and adhered to. Crucial considerations are: how much will be invested into the fund? What is a poor year? How much will be withdrawn in any given year? When can withdrawals be made? As well, getting the fund started could be difficult if one encountered poor growing conditions during the initial years. Finally, alternative uses for the fund may arise and the money could conceivably be used for different purposes than originally intended.

There is no doubt that production risk can be diminished by adjusting production and management techniques. Consider the selection of early and late maturing varieties of crops as an example. In a late spring, the decision to seed an early variety may be made, because a shorter growing season is a real possibility. Alternately, seeding a later maturing but higher yielding variety is tempting. The manager must be aware of his objectives, and understand that advantages gained in one respect (e.g. less production risk), could be offset in another (e.g. lower yield or less income). Regardless of how much the production risk is reduced, the remaining risk is borne entirely by the farmer.

The next dimension of the risk-reducing process then, is to transfer some of the risk to another party. Whenever one deals with an outside party, it is necessary to specify a number of criteria in order that the two parties (the insured and the insurer), know their respective obligations. These criteria very briefly are that:

1. The risk is identifiable and measurable.
2. The loss is identifiable and measurable.
3. Losses are accidental.
4. The potential loss warrants protection.
5. The risk is economically feasible. In other words the probability of loss is not so high that it is not economic to insure it.
6. The insurance is widely dispersed so as to prevent catastrophic losses.

With these conditions specified, the insurance contract can be developed outlining the specific perils covered, the amount of coverage provided by the insurer, and the premiums paid by the insured.

WHAT IS BASIC (ALL-RISK) CROP INSURANCE?

To this point, the conditions necessary for the insurance process to function have been identified. The objective of insurance as a method of transferring and therefore reducing risk has been indicated. Let's relate these concepts as they pertain to basic crop insurance by way of an example situation. Meet Ben and Joe, who farm in central Alberta.

It is the first of March, and Ben recently received the following information in the mail from the Alberta Hail and Crop Insurance Corporation (Figures 1. and 2.). Ben has been purchasing all-risk crop insurance for the past three years. Cropping costs are high and he is starting to question if the insurance is necessary because he has never made a claim. Besides, his neighbor Joe has farmed for over 20 years, and he has never bought crop insurance. Joe has indicated to Ben that he thinks the Corporation's area average yields are too low, its premiums are too high, and coverage is insufficient when compared to the value of the potential crop loss. Ben believes it is necessary to find out more about crop insurance before he decides what insurance he should purchase.

BACKGROUND

The first words Ben notices on the Record of Experience form (Figure 1 A) are "CANADA-ALBERTA Crop Insurance". He is aware that all-risk crop insurance is only available through the Alberta Hail and Crop Insurance Corporation. But he is surprised to see a connection made between "Canada" and "Alberta Crop Insurance".

Current provincial crop insurance programs are the consequence of the Canadian Crop Insurance Act, passed by the Parliament of Canada in 1959. The Act states that the federal government will participate financially in provincial crop insurance programs provided they are based on actual yield data, and that coverage does not exceed 80 per cent of the area average yield. In Alberta, one-half of the total premium cost is paid by the federal government. The Government of Alberta has assumed the administrative cost of the program and a portion of the farmer's premium, if it exceeds six or eight per cent of the dollar value of coverage at 60 or 70 per cent coverage levels respectively. (More information on coverage levels will follow.)

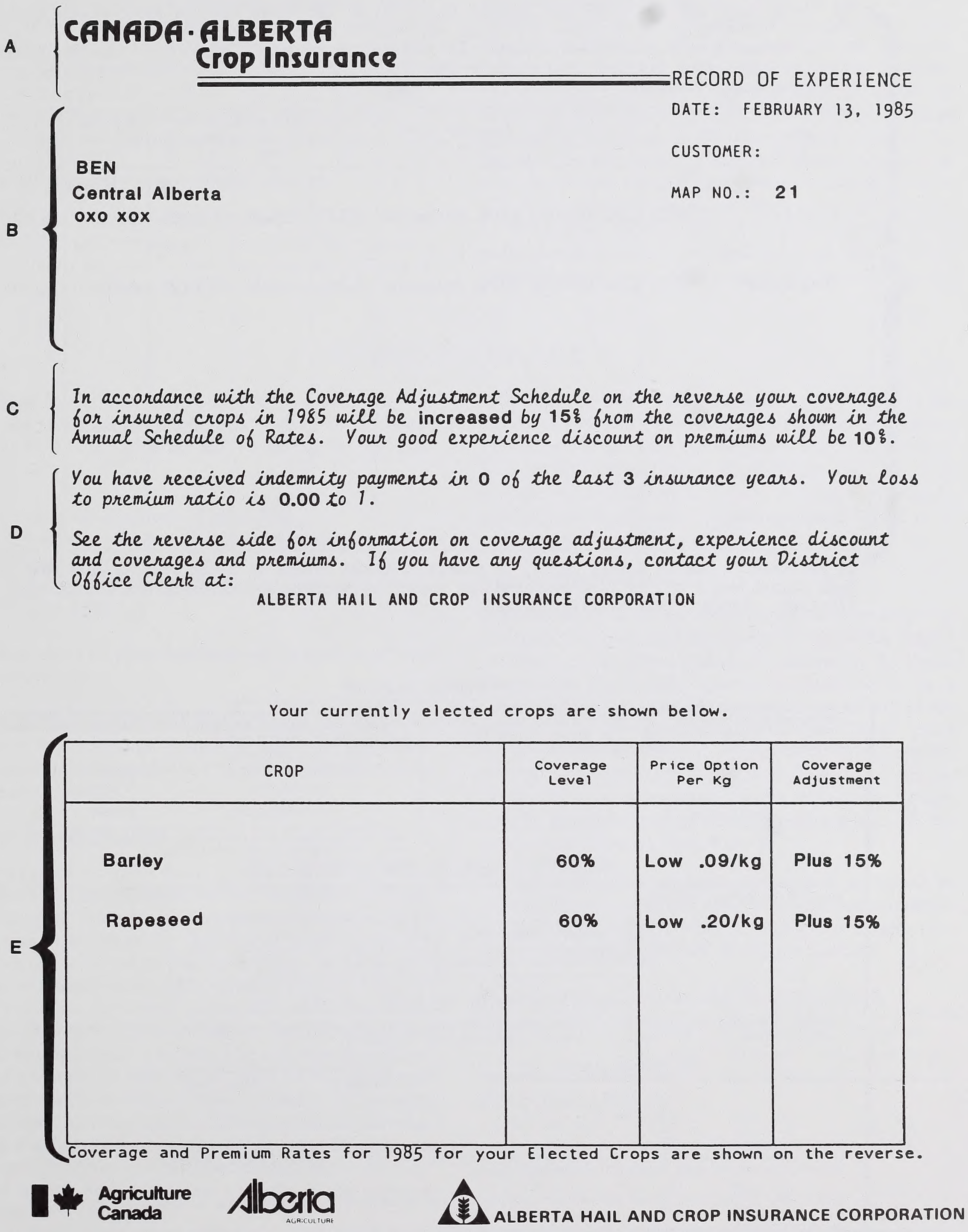
All-risk crop insurance was first offered in Alberta in 1965. In 1969, the Alberta Hail Insurance Board and the Alberta Crop Insurance Corporation merged and integrated their respective hail and crop insurance programs. As a result, the Alberta Hail and Crop Insurance Corporation offers three major programs.

These are:

- Basic Crop Insurance Program (formerly called All-Risk Crop Insurance)
- Hail Endorsement to the Basic Crop Insurance Program
- Hail Insurance.

The Basic Crop Insurance and Hail Endorsement policies are operated under the name "Canada-Alberta Crop Insurance". In 1984, over 22,000 Alberta farmers insured more than nine million acres in these programs. Farmers and the federal government each paid about $50 million in premiums. The Alberta Government's share of subsidized premiums and administration costs amounted to $8 million. A record $220 million of indemnities were paid in the same year. About 3.4 million acres were insured under the Hail Insurance program.

Figure 1.



CANADA·ALBERTA
Crop Insurance

RECORD OF EXPERIENCE
DATE: FEBRUARY 13, 1985
CUSTOMER:
MAP NO.: 21

BEN
Central Alberta
OXO XOX

In accordance with the Coverage Adjustment Schedule on the reverse your coverages for insured crops in 1985 will be increased *by* 15% *from the coverages shown in the Annual Schedule of Rates. Your good experience discount on premiums will be* 10%.

You have received indemnity payments in 0 *of the last* 3 *insurance years. Your loss to premium ratio is* 0.00 *to 1.*

See the reverse side for information on coverage adjustment, experience discount and coverages and premiums. If you have any questions, contact your District Office Clerk at:

ALBERTA HAIL AND CROP INSURANCE CORPORATION

Your currently elected crops are shown below.

CROP	Coverage Level	Price Option Per Kg	Coverage Adjustment
Barley	60%	Low .09/kg	Plus 15%
Rapeseed	60%	Low .20/kg	Plus 15%

Coverage and Premium Rates for 1985 for your Elected Crops are shown on the reverse.

Agriculture Canada   Alberta AGRICULTURE   ALBERTA HAIL AND CROP INSURANCE CORPORATION

Figure 2.

A

The rates shown are for crops you insured last year at the price options and coverage levels elected. Coverages and premiums have been adjusted to reflect your Coverage Bonus or Reduction and your Experience Discount. The difference between "Total" and "Your Net Premium" is accounted for by the contribution from the Federal and Provincial Governments and your Good Experience Discount

CROP and SOIL	Price Option per Kilogram	Coverage Level Cropping Practice	Coverage per Acre in:			Premium per Acre	
			Kg	Bus	Dollars	Total	Your Net Premium
Barley AO	**Low.09/kg**	**60% Stubble**	**787**	**36.2**	**70.83**	**3.80**	**1.71**
Rapeseed AO	**Low.20/kg**	**60% Stubble**	**385**	**17.0**	**77.00**	**4.80**	**2.16**

If you wish to add or delete crops, or change coverage levels or price options this must be done before May 1 at the time you complete your Confirmation of Insurance and Change of Election. Contact your District Office.

B

EXPERIENCE DISCOUNT

THE EXPERIENCE DISCOUNT IS GIVEN TO POLICYHOLDERS IN RECOGNITION OF LOSS-FREE EXPERIENCE. FOLLOWING EACH LOSS-FREE YEAR, THE INSURED MOVES ONE STEP AHEAD IN THE DISCOUNT SCHEDULE:

PREMIUM DISCOUNT

STEP	1	2	3	4	5	6	7
DISCOUNT %	0	3	6	10	15	20	25

AFTER A LOSS-YEAR, THE INSURED MOVES BACK IN THE DISCOUNT SCHEDULE, THE AMOUNT DEPENDING UPON HIS LOSS-TO-PREMIUM RATIO AFTER THE LOSS IS PAID.

LOSS-TO-PREMIUM RATIO AFTER LOSS IS PAID	MOVE BACK
0.00-0.99 TO 1	1 STEP
1.00-1.99 TO 1	2 STEPS
2 OR MORE TO 1	3 STEPS

COVERAGE DOES NOT MOVE BELOW BASIC UNLESS THERE HAS BEEN TWO OR MORE LOSSES IN THE LATEST THREE INSURANCE YEARS AND A LOSS - TO-PREMIUM RATIO GREATER THAN 1 TO 1.

ADJUSTMENT ABOVE THE BASIC COVERAGE LEVEL

THE COVERAGE OF AN INSURED IS TIED TO THE GOOD EXPERIENCE DISCOUNT AND MOVES AHEAD OR BACK WITH THE DISCOUNT, IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:

C

GOOD EXPERIENCE DISCOUNT %	3	6	10	15	20	25
INCREASE OVER BASIC COVERAGE %	5	10	15	20	25	30

ADJUSTMENT BELOW THE BASIC COVERAGE LEVEL

D

WHERE AN INSURED HAS HAD TWO OR MORE LOSS-YEARS IN THE LATEST THREE YEARS UNDER INSURANCE, AND HAS A LOSS-TO-PREMIUM RATIO GREATER THAN 1 TO 1, COVERAGE IS REDUCED BELOW THE BASIC LEVEL AS FOLLOWS:

LOSS-TO-PREMIUM RATIO AFTER LOSS IS PAID	REDUCTION BELOW BASIC COVERAGE LEVEL	
	2 LOSS-YEARS	3 LOSS-YEARS
1.00-2.99 TO 1	0%	20%
3.00-5.99 TO 1	10%	30%
6 OR MORE TO 1	20%	40%

COVERAGE OF AN INSURED MOVES TO THE BASIC LEVEL, WHEN HE HAS HAD ONLY ONE LOSS-YEAR IN THE LATEST THREE YEARS IN WHICH HE HAS BEEN INSURED, OR WHEN HIS LOSS-TO-PREMIUM RATIO BECOMES LESS THAN 1 TO 1. COVERAGE IN SUBSEQUENT YEARS MOVES UPWARD OR DOWNWARD FROM THIS LEVEL, DEPENDING ON LOSS EXPERIENCE.

DEFINITIONS: A "LOSS YEAR" IS ANY YEAR IN WHICH THE INDEMNITY IS 20% OR MORE OF AN INSURED'S NET ACCUMMULATED PREMIUM.

NET ACCUMMULATED PREMIUM IS THE TOTAL PREMIUM PAID ON BEHALF OF THE INSURED LESS TOTAL INDEMNITIES, DURING PERIODS INSURED.

Currently, 25 crops are insurable, including barley, wheat, oats, rapeseed, hay and pasture, and a number of specialty crops. Most recently added to the list was coverage for the pedigreed seed of cereal, oilseed, alfalfa and creeping red fescue crops. For more information on insurable crops contact your district office of Alberta Hail and Crop Insurance Corporation.

MAP NUMBERS AND RISK AREAS

The remainder of the introductory information in Figure 1 B is self explanatory, except for the reference to the "map number". The province of Alberta is divided into 14 risk areas, each containing a number of counties, municipal districts (MD) or improvement districts (ID) of similar agricultural capability and climatic conditions. The map number refers to the county, MD or ID in which the policyholder resides. The Alberta Hail and Crop Insurance Corporation has its own numbering system, so the number on the form will not be the same as the county or ID number. In Figure 1, the map number is 21, which is the County of Mountain View No. 17. This county is in Risk Area 5, which also contains the MD of Rockyview, the County of Wheatland and the MD of Kneehill. Area average yields are determined by acquiring yield data for each insurable crop from farms in each of the risk areas.

BASIC COVERAGE

The first line of the text in Figure 1 C, refers to the "Coverage Adjustment Schedule", which is the lower half of Figure 2. There are three headings in this area which are:

- Experience Discount (Figure 2 B)
- Adjustment Above The Basic Coverage Level (Figure 2 C)
- Adjustment Below The Basic Coverage Level (Figure 2 D)

The keywords in these headings are "experience" and "basic coverage".

As these two items will significantly influence the amount of coverage available and the premium necessary, it is important to review how this part of the program works.

COVERAGE PER ACRE

Earlier, reference was made to the risk areas in the province and area average yields. Area average yields are acquired from yield information requested from policyholders either by individual visits from the district office, or when the farmer goes to the district office to make changes to his contract prior to May 1. The yields of the crops grown in each risk area are compiled by soil type, and whether the crop was grown on summerfallow or stubble. The soil type is assigned to each section of land on the basis of the municipal assessment. These yields are then added to the averages of the previous nine years and new-ten year area average yields are derived for each insurable crop. The Alberta Hail and Crop Insurance Corporation offers coverage based on 60 or 70 per cent of each of the running ten-year area averages.

In the case of Ben's farm, the soil type is "A" and the crop intended to be seeded is barley grown on stubble. The 60 and 70 per cent coverage levels of 31.5 and 36.7 bushels per acre (Figure 3), indicate that the area average yield for barley on Soil A, stubble, Risk Area 5, is 52.5 bushels per acre. (Coverage/acre X 100 ÷ % coverage = area average yield).

PRICE OPTIONS

Once coverage levels are determined, the next step is to multiply the coverage level yields by either the "high" or "low" price option in order to determine the **Basic Coverage**. The "high" option is intended to be a conservative estimate of the actual price of crops produced in the upcoming year. The "low" price option results in a reduced amount of coverage, but the cost of the premium is lower as well. Figure 3, shows levels of coverage, the price options, the basic coverage, and the premium cost of insuring barley grown on the various soil types in Risk Area 5.

Ben has four levels of basic coverage from which to choose. These are 60 per cent or 70 per cent coverage multiplied by either the low or high price options (for barley these are $1.96 and $2.61 per bushel).

Table 1. Basic Coverage and Premium Levels

	Price Option	Basic Cov/ac	Farmers Premium/ac
60% Stubble Soil A			
31.5 bu/ac	LO	$61.74	$1.90
	HI	$82.22	$2.50
70% Stubble Soil A			
36.7 bu/ac	LO	$71.93	$3.35
	HI	$95.79	$4.45

CANADA·ALBERTA
Crop Insurance

Figure 3.

1985 COVERAGE AND PREMIUM RATES

BARLEY

RISK AREA 05 CALGARY NORTH

INCLUDING COUNTY, M.D. OR I.D.

ROCKYVIEW
WHEATLAND
MOUNTAINVIEW
KNEEHILL

LOW PRICE OPTION NO. 1 $ .09/KG $1.96/BUS.
HIGH PRICE OPTION NO. 2 $ .12/KG $2.61/BUS.

FALLOW - 60% COVERAGE

SOIL	COVERAGE PER ACRE IN:		LOW PRICE OPTION NO. 1			HIGH PRICE OPTION NO. 2		
			DOLLAR COVERAGE PER ACRE	PREMIUM *		DOLLAR COVERAGE PER ACRE	PREMIUM *	
	KILOGRAMS	BUSHELS		TOTAL	FARMER		TOTAL	FARMER
A	860	39.5	$ 77.40	$ 4.70	$ 2.35	$103.20	$ 6.20	$ 3.10
B	775	35.6	69.75	4.70	2.35	93.00	6.20	3.10
C	685	31.5	61.65	4.70	2.35	82.20	6.20	3.10
D	595	27.3	53.55	4.70	2.35	71.40	6.20	3.10
E	510	23.4	45.90	4.70	2.35	61.20	6.20	3.10
STUBBLE - 60% COVERAGE								
A	685	31.5	$ 61.65	$ 3.80	$ 1.90	$ 82.20	$ 5.00	$ 2.50
B	615	28.2	55.35	3.80	1.90	73.80	5.00	2.50
C	545	25.0	49.05	3.80	1.90	65.40	5.00	2.50
D	475	21.8	42.75	3.80	1.90	57.00	5.00	2.50
E	405	18.6	36.45	3.80	1.90	48.60	5.00	2.50
FALLOW - 70% COVERAGE								
A	1005	46.2	$ 90.45	$ 8.40	$ 4.20	$120.60	$11.20	$ 5.60
B	905	41.6	81.45	8.40	4.20	108.60	11.20	5.60
C	800	36.7	72.00	8.40	4.20	96.00	11.20	5.60
D	700	32.2	63.00	8.40	4.20	84.00	11.20	5.60
E	595	27.3	53.55	8.40	4.20	71.40	11.20	5.60
STUBBLE - 70% COVERAGE								
A	800	36.7	$ 72.00	$ 6.70	$ 3.35	$ 96.00	$ 8.90	$ 4.45
B	720	33.1	64.80	6.70	3.35	86.40	8.90	4.45
C	640	29.4	57.60	6.70	3.35	76.80	8.90	4.45
D	555	25.5	49.95	6.70	3.35	66.60	8.90	4.45
E	475	21.8	42.75	6.70	3.35	57.00	8.90	4.45

* THE GOVERNMENT OF CANADA PAYS ONE-HALF OF TOTAL PREMIUM. WHERE THE FARMER PREMIUM IS LESS THAN ONE-HALF OF THE TOTAL PREMIUM, THE DIFFERENCE IS MADE UP BY A HIGH-RISK SUBSIDY PAID BY THE PROVINCE OF ALBERTA

Small differences in the dollar amount of coverage in Table 1 and Figure 3 occur due to conversion of metric to imperial units. Alberta Hail and Crop Insurance Corporation uses metric units in their calculations.

The summary shows the basic coverage ranges from $61.74 to $95.79 per acre. This range indicates the levels of payouts an individual with basic coverage (no adjustment for experience) would receive if there was a complete crop loss.

PREMIUMS

Premiums vary with respect to risk areas, crops, soil types, the amounts of coverage, and the price options selected. In general, premiums are calculated for each risk area based on the loss experience averaged over the last 25 years. Since the program has been in existence less than 20 years, a theoretical loss is being estimated for each year the actual loss has yet to be determined. Once 25 years of actual data has been collected, the theoretical losses will no longer be needed.

Referring to Figure 3, the premiums are quoted in "Total" as well as the "Farmer" portion. The total premium is the combined premiums paid by the farmer, the federal government and the provincial government subsidy, if required. A review of premium rates in Table 1 or Figure 3, indicates that the premium varies considerably between the lowest and highest amounts of coverage.

For example, Table 1 shows that the premium could be as low as $1.90 or as high as $4.45 per acre for barley on stubble, soil type A. As the amount of coverage increases it is necessary to increase the premium cost. This is similar to increasing the deductible clause on auto or house insurance policies in order to reduce the premium.

ADJUSTMENTS FOR EXPERIENCE

Once the level of basic coverage has been established, the next step is to adjust the coverage yields and premiums with respect to an individual's experience. The coverage adjustment schedule (Figure 2B, 2C, 2D), has been developed to provide coverage that more closely represents a producer's actual yields.

PREMIUM DISCOUNT

In Ben's case, insurance has been purchased for the last three years and no claims have been filed with the corporation. Referring to Figure 2B, locate the section entitled ***Experience Discount***. Given Ben's experience, what step should he be at? The correct answer is Step 4. A new policyholder would start at Step 1. Each year a policyholder has a "loss-free" year, he moves ahead one step. Being at Step 4 results in a premium reduction of 10 per cent (Figure 2 B).

COVERAGE ADJUSTMENTS

The amount of coverage is also related to the experience of the policyholder. Refer to Figure 2 C, the section dealing with ***Adjustment Above Basic Coverage*** and determine the coverage increase for Ben. A good experience premium discount of 10 per cent results in a 15 per cent increase over the basic coverage. In Ben's case, at a 60 per cent coverage level and the low price option, the basic coverage would be adjusted from $61.74 to $70.95 per acre, while the cost of the premium would be decreased from $1.90 to $1.71 per acre.

The combination of reduction in premium and increase in coverage can be quite significant with respect to the amount of coverage an individual can acquire and its subsequent cost. Premiums may be reduced by as much as 25 per cent while the coverage can be increased up to 30 per cent for producers with seven years of good experience.

Given that coverage is increased and premiums are discounted with loss-free experience, it follows that coverage will be reduced and premiums increased when a producer incurs a loss. This adjustment is determined by the number of payouts in the latest three years of insurance and the loss-to-premium ratio. A policyholder's record of this information is located in the first paragraph of text in Figure 1 D.

Policyholders may be surprised to learn that a payout on a loss may not necessarily trigger a reduction in coverage and increase in premium. A "loss-year" is defined as a year when the indemnity is 20 per cent or more of an insured's "net accumulated premium". The "net accumulated premium" is the total premium (combined farmer and government) less the indemnities paid.

In Ben's situation (Table 2), the net accumulated premium is $11,500. A loss year would not be incurred unless a claim of $2300 ($11,500 X 20%) or more was made in 1984.

Table 2. Ben's Accumulated Premiums and Indemnities

	PREMIUMS				
Year	**Applicant**	**Alberta**	**Canada**	**Total**	**Indemnities**
1982	$1850	0	$1850	$3700	0
1983	$1790	0	$1790	$3580	0
1984	$2110	0	$2110	$4220	0
		TOTAL		$11500	0

Referring to Figure 2 B, notice that after a loss-year, the policyholder will move back in the experience discount schedule depending upon his "loss-to-premium ratio". The loss-to-premium ratio is derived by dividing the total indemnities received by the total accumulated premium. A loss-to-premium ratio of 1.00 would indicate that for each dollar of premium (combined farmer and government) a policyholder has received a dollar in payouts.

Suppose Ben had a shortage in production that resulted in a $5000 payout. How would this affect his experience discount and coverage adjustment? His loss-to-premium ratio would be $5000 divided by $11,500 equalling 0.43. The schedule (Figure 2 B) indicates that a ratio of less than 1, would result in moving back one step. As a policyholder moves back on the experience discount schedule a corresponding adjustment to the coverage level is made (Figure 2 C). In Ben's case, next year his experience discount would be six per cent with a ten per cent increase over basic coverage (Step 3).

A reduction below the basic coverage level would not normally occur except in situations where there have been two or more "loss-years" in the latest three years of insurance and the loss-to-premium ratio exceeds 1.00. As Figure 2 D, **Adjustment Below The Basic Coverage Level** indicates, a reduction of the basic coverage level could be as much as 40 per cent if the loss-to-premium ratio was 6 or more to 1, and three loss-years in a row were experienced.

It is important to note that should a policyholder drop out of the insurance program he would lose any experience discount and coverage adjustment acquired at the time of the cancellation. If an individual was in a reduced coverage situation however, he would be reinstated at that level should he re-apply. Policyholders should also be aware that claims made on the hail endorsement do **not affect experience and coverage adjustment.**

The upper half of Figure 2 (Figure 2 A), indicates Ben's 1985 premium based on the crops he insured and the price options and coverage levels selected last year. Coverage and premiums have been adjusted from the basic coverage and premium rates to reflect his cropping experience.

Policyholders are reminded as well, that changes in the contract with respect to price options, coverage levels, or deletion or addition of crops must be made before May 1 for spring seeded crops and September 1 for fall seeded crops.

FARM SIZE DISCOUNT

One further adjustment to the premium is made on the basis of the number of acres being insured by policyholders. As the size of a farm increases there is less likelihood of losing an entire crop, since the crop would be dispersed over a larger area and subject to varying conditions. As a result, the total premium is discounted according to the following schedule:

0 - 299 acres - nil
300 - 599 acres - 5%
600 - 899 acres - 10%
900 plus acres - 15%

As Ben farms and insures 1000 acres, the premium will be discounted by 15 per cent in addition to adjustments already made for his cropping experience. The size discount is only made on the Basic or All-Risk Crop Insurance premium and not on the Hail Endorsement premium. Furthermore, the size discount is not deducted from the premium rates indicated on the Record of Experience (Figure 1). The calculation will be made on the Statement of Coverage and Premium received once the insurance contract for the current year has been drawn up.

SUMMARY

If Ben was to insure at the 60 per cent coverage level and low price option, his coverage and premiums adjusted for his experience and size would be as follows:

CROP:	Barley	Rapeseed
Bushel Coverage/Acre:	36.2 bu/ac	17.0 bu/ac
Dollar Coverage/Acre:	$70.95/ac	$77.18/ac
Premium:	$1.42/ac	$1.80/ac

UNDERSTANDING CLAIMS

The number of insurable crops have been identified and the coverage levels and price options, which result in the dollar amount of coverage per acre, have been reviewed. The ways in which premiums are affected by the coverage level, price options and the producer's experience have been related as well. Now let's review how loss claims are handled.

PERILS INSURED AGAINST

The Basic Crop Insurance Policy covers the loss of production due to unavoidable natural causes. These include drought, flood, hail, wind, frost, fire (by lightning), snow, excessive moisture, wildlife, plant diseases, insect and pest infestations. The insurance does not cover losses caused by neglect or poor farming practices.

LOSS PROGRAMS

Having purchased the basic insurance, the producer is entitled to the benefits of the various loss programs in the event of crop loss. These are:

1. The Basic Claim
2. Allowance for Designated Grades
3. Unseeded Acreage Coverage
4. Reseeding Benefit
5. Allowance for Snowed-Under Crops
6. Allowance for Drying Grain

1. Basic Claim

Prior to May 1, Ben decided to seed 700 acres of barley and 300 acres of rapeseed. He insured at 60 per cent coverage low price option. The coverage levels are 36.2 bu/ac and $70.95 per acre dollar coverage for barley and 17.0 bu/ac and $77.18 per acre dollar coverage for rapeseed (Figure 2A).

During the course of the summer, 160 acres of barley were completely destroyed in a hail storm (assume no hail endorsement). The remaining barley and rapeseed were subsequently harvested at yields of 65 and 25 bushels per acre. Is Ben in a claim position?

In this example, 540 acres of barley were harvested at 65 bushels per acre, for a total of 35,100 bushels. The average yield for the 700 acres of barley seeded is 50 bushels per acre. As the average production is above the 60% coverage yield level of 36.2 bushels per acre, no claim can be made. There would be no claim on the rapeseed either as the harvested yield was greater than the coverage level.

It is important to note that each crop is considered individually, and indemnities are calculated separately. This means that a loss could be paid on one crop even though other grains produced have yielded above their respective coverage levels.

In another situation, a general frost reduces yields and grades of grains produced to 30 bushels of No. 1 Feed barley and 10 bushels of No. 3 Canada rapeseed per acre.

The claim on the barley crop is quite straight forward. The coverage level is 36.2 bu/ac less the production of 30 bu/ac = 6.2 bu/ac. This deficiency is multiplied by Ben's elected price option of $1.96 for a payout of $12.15 per acre X 700 acres = $8,505.

What about the poorer grade of the grain produced? Obviously the loss of grade will negatively affect the revenue potential of the crop. For this reason it is important to understand how this situation is dealt with.

2. Designated Grade Allowance

When crops are insured, the production level and quality of grain produced is guaranteed. The Corporation has assigned a level of quality for each grain which is called the "designated grade".

The designated grades for some common crops are:

- No. 2 Canada, for most wheat varieties
- No. 1 Feed, for oats and barley
- No. 1 Canada for rapeseed and flax.

Contact your district office if you are not familiar with the designated grades for individual crops.

In the barley claim, even though the grade was reduced because of the frost, no additional compensation will be made as the barley graded No. 1 Feed. In the case of the rapeseed production however, not only was the yield below the coverage level, but the grade produced was poorer than the grade designated in the contract.

Ben's coverage level is 17.0 bu/ac of Canada No. 1 rapeseed. Production however, is 10.0 bu/ac, Canada No. 3 rapeseed. Because Ben's rapeseed is of poorer quality than the grade he was insured for, it is necessary to compensate him for the difference. Each year the corporation establishes factors, based on the spread between initial payments of the different grades of grain. For crops not priced by the Canadian Wheat Board, open market prices are used. In 1984 for example, Canada No. 3 rapeseed was considered to be priced at 76.1 per cent of the value of Canada No. 1 rapeseed. Going back to our example the production (10.0 bushels per acre) is multiplied by the factor (76.1%), which equals the adjusted production for loss of grade (7.61 bu/ac). Coverage (17.0 bu/ac) less the adjusted production (7.61 bu/ac) equals the production shortage, which in this case is 9.39 bushels per acre. The per acre shortage (9.39 bushels) multiplied by the price option ($4.54/bu) on 300 acres insured, amounts to $12,789.00 total payout on rapeseed.

3. Unseeded Acreage Coverage

This is an optional program that offers protection against the producer's inability to seed insured acres due to excessive moisture. The coverage must be elected before May 1, usually at the time when confirmation of insurance decisions are made.

The intention of this program is to cover at least a portion of the expenses the producer has incurred in preparing the land for seeding. There is no additional premium for this coverage except when a payout is made, in which case a $0.50 levy per acre is deducted from the payout. The payout is restricted to $20 per insured acre before adjustments. In Ben's case, the 15 per cent coverage adjustment would increase the level to $23 per eligible acre. An example of a payout in this program is as follows. Assume Ben could not seed 200 acres of his 1000 acre farm by June 20. The total acreage declared (1000), less a 10 per cent deductible adjustment (1000 X 10% = 100), leaves 900 acres eligible. Subtracting the number of acres seeded, whether they are insured or not (800), from the acres eligible (900), results in a payout on 100 acres at $23 per acre. The total levy would amount to $50, (100 acres X $0.50) and is then deducted from the $2300 indemnity (100 acres X $23). This results in a $2250 net payout. Except for the levy, there is no Basic Crop Insurance premium charge on the 200 acres that were unseeded. Premiums and coverage remain in effect on the 800 acres that were seeded. Note as well, that unseeded acreage payments are restricted to blocks of 5 acres or more that could not be seeded.

Normally, producers would only elect this provision if all crops intended to be seeded are insured. This is because all acres (whether they are insured or not) are taken into account when determining the payable loss.

Losses paid affect the good experience discount and coverage adjustments of a policyholder.

4. Reseeding Benefit

Coverage of $12 per acre for reseeding is payable under the Basic Crop Insurance Policy to producers who reseed insured acres damaged by natural causes such as wind and crusting. Acres reseeded because of weed infestation are not eligible. The acreage must be inspected before reseeding takes place, and must be completed before June 20, or the specified dates for fall-seeded crops. (Refer to Important Crop Insurance Dates, Appendix B.) Losses paid affect the good experience discount and coverage adjustment, however no additional premium is required.

5. Allowance for Snowed-Under Crops

Under this provision, producers are entitled to an advance payment on insured acres that are snowed-under. Payouts will be made on unharvested acres for each crop above 20 per cent of the insured acreage of that crop. The allowance will be 25 per cent of the producer's coverage for the eligible acres. If the coverage level for the crop has been harvested however, no further allowance can be made. Any allowance paid under this provision is regarded as a loss and affects the good experience discount and coverage adjustment.

6. Allowance for Drying Grain

An allowance at specified rates is made for grain that has been artificially dried and on which a claim is payable. Once the coverage level is met there is no further allowance for drying grain. As well, when there is not a payable loss, the Corporation cannot recognize the drying costs which a policyholder has incurred. If a producer is in a claim position and has dried grain he should advise the after-harvest inspector in order to obtain the allowance.

THE HAIL ENDORSEMENT

The **Hail Endorsement** is an optional policy of the **Basic Crop Insurance Program.** Policyholders must purchase the Basic Insurance in order to get the Hail Endorsement. The main feature of this provision is that it allows for "spot-loss" coverage against damage caused by hail and accidental fire. Spot-loss coverage means that a producer is able to make a claim against damage to individual fields, regardless of the production of the rest of the crop.

Producers must indicate they want the Hail Endorsement before May 1 for spring crops, and September 1, for fall crops. The endorsement may be cancelled at any time, in which case the premium cost is pro-rated for the time the coverage was in effect.

Hail Endorsement coverage requires a separate premium in addition to the Basic Crop Insurance Policy premium. Each township in the province has been assigned a value called the "hail premium rate". These rates can be obtained from district offices of Alberta Hail and Crop Insurance Corporation. The Hail Endorsement premium paid by the farmer for cereal grains is calculated at 40 per cent of this rate, multiplied by the actual amount of coverage per acre in the Basic Crop Insurance Policy. In Ben's case, the hail premium rate for his farm is 11 per cent. The Hail Endorsement premium for barley is 40 per cent (0.4) x hail premium rate (0.11) x dollar coverage per acre ($70.95), or $3.12 per acre.

The Hail Endorsement premium for oilseed and seed crops is calculated at 1.5 times the hail premium rate. Ben's rapeseed premium would be 40 per cent (0.4) x hail premium rate (0.11) multiplied by 1.5 x coverage per acre ($77.18) or $5.09 per acre.

As with the Basic Crop Insurance Program, the federal government pays to the Corporation an amount equal to the premium the farmer pays for the Hail Endorsement. Loss payments made under the Hail Endorsement do not affect the good experience discount or the coverage adjustment of the Basic Crop Insurance Program. Similarly the size and good experience discounts earned in the Basic Crop Insurance Program do not apply in premium calculations for the Hail Endorsement.

Coverage on each field or parcel is the same as the adjusted coverage in the Basic Crop Insurance Policy.

Indemnities paid under the Hail Endorsement are based on the total coverage of the insured crop and the percentage of damage. The combined indemnities of the Hail Endorsement and the Basic Crop Insurance cannot exceed the amount of the adjusted basic coverage in total bushels and dollars.

Three examples using Ben's insurance policy are given to demonstrate how the Hail Endorsement and Basic Crop Insurance claims are calculated. In all of the examples it is important to keep the following information in mind:

CROP: Barley
ACRES INSURED: 700
COVERAGE/ACRE: 36.2 bu/ac
TOTAL BUSHEL COVERAGE: 25,340 bu (36.2 bu/ac x 700 ac)
PRICE OPTION: $ 1.96/bu
TOTAL DOLLAR COVERAGE: $49,666.40 (25,340 bu x $1.96/bu)

EXAMPLE A

160 acres of barley are hailed out 100 per cent and the remaining 540 acres yield 35,100 bushels.

HAIL ENDORSEMENT:
% damage x coverage (bu)/ac x no. of acres = bushels
100 x 36.2 bu/ac x 160 ac = 5,792 bushels
bushels x price option = payout
5,792 x $1.96 = $ 11,352.32

BASIC CROP INSURANCE: As 35,100 bushels is greater than the total bushel coverage level of 24,920 bushels, there is no further payout.

TOTAL PAYOUT: $11,352.32

EXAMPLE B

160 acres of barley are hailed out 50 per cent and the remaining 540 acres yield 16,200 bushels.

HAIL ENDORSEMENT:
% damage x coverage (bu)/ac x no. of acres = bushels
50% x 36.2 bu/ac x 160 ac = 2,896 bushels
bushels x price option = payout
2,896 x $1.96 = $ 5,676.16

BASIC CROP INSURANCE:
coverage – production = shortage
25,340 bu – 16,200 bu = 9,140 bushels
shortage x price option = payout
9,140 bu x $1.96 = $17,941.40

TOTAL PAYOUT:
$5,676.16 + $17,941.40 = $ 23,590.56

EXAMPLE C

400 acres of barley are hailed out 100 per cent and the remaining 300 acres yield 9000 bushels.

HAIL ENDORSEMENT:
100% x 36.2 bu/ac x 400 ac = 14,480 bushels
14,480 x $ 1.96 = $ 28,380.80

BASIC CROP INSURANCE:
25,340 bu – 9,000 bu = 16,340 bushels
16,340 bu x $1.96 = $ 32,026.40

TOTAL PAYOUT: $ 28,380.80 + $32,026.40 = $60,407.20 is greater than the total dollar amount of coverage available. Therefore the maximum payout is limited to $ 49,666.40

Note: Should production be less than the total bushel coverage for a particular crop, contact the district office within 15 days of completing harvest to file a shortage claim.

HAIL INSURANCE

Additional Hail Insurance may be purchased through Alberta Hail and Crop Insurance Corporation. However, this program is completely independent of the Basic Crop Insurance and Hail Endorsement Programs. Hail Insurance premiums are paid on the basis of the published Hail Premium Rate Guide with full coverage, 10 per cent and 25 per cent deductible policies available. The maximum amount of coverage available is $125 per acre for cereal grains and $250 per acre for certain specialty crops.

Hail Insurance is also available from private companies. In Alberta, eight companies presently are registered to sell hail insurance policies. The insurance is offered through a wide variety of outlets and the coverage and premiums vary from company to company. Indemnities paid through private "line" companies in no way affect the producer's insurance position with the Alberta Hail and Crop Insurance Corporation.

INDIVIDUAL COVERAGE

Individual Coverage is an optional feature of the Basic Crop Insurance Program. The farmer's own yields are used to calculate the coverage level. Factors such as soil type, whether the crop was grown on fallow or stubble, and the coverage adjustment schedule are not applicable, and are eliminated since the coverage depends strictly on the farmer's actual production. Premiums for Individual Coverage are the same as in the Basic Crop Insurance Policy and are adjusted for the farm size and the cropping experience.

The calculation to establish a producer's individual average yield would normally be based on the previous year's production and four years of area average yields. With each succeeding crop, another year's actual production would be added, and one year of the area average yield eliminated. After five years, the coverage would be based entirely on the farmer's own production.

Annual production records would continue to be added until 10 years of data have been accumulated, and thereafter the average would be based on the latest 10 year period. A producer can speed up this process however, if well-documented records are available (e.g. permit book and/or grain-sale receipts).

Ben is able to provide records that show his production during the past three years was 83, 50, and 72 bu/ac respectively. The district office informed Ben that the area average yield for barley in his risk area is 52.5 bu/ac. This yield would be adjusted upwards by 15 per cent to reflect his experience and therefore equals 60.4 bu/ac. Ben's five year average yield would be calculated on the following basis: (83+50+72+60.4+60.4)/5 = 65.2 bu/ac.

As in the Basic Crop Insurance Policy, the coverage is limited to 60 and 70 per cent of the individual's average yield. In Ben's case, this would mean that the 60 per cent and 70 per cent coverage levels would be 39.1 and 45.6 bu/ac respectively.

While Individual Coverage is intended to provide for higher coverage levels, these levels will drop if a producer encounters poor production or a crop loss. This is because the producer's actual average yield is the only factor that determines the coverage level. Under the Basic Crop Insurance Plan, a policyholder with "loss-free" experience can increase coverage by as much as 30 per cent over the basic coverage, even though his actual production may not be as high as the adjusted area average. It is recommended, for this reason, that only producers whose crop production is consistently greater than 30 per cent of the area average yield apply for Individual Coverage. In Ben's case, for example, the 50 bushel yield in the second year and the two years of area averages resulted in his individual average being just marginally better than the basic coverage. Ben decides to stay on the Basic Program until he has more years of data to confirm his production capability.

Producers should be aware that they are required to keep better production records and to store grain so that it is identifiable and measurable in order that yields can be verified. Producers would not necessarily have to insure all of their crops, but when they select Individual Coverage, all the crops they do insure must be insured under the Individual Coverage rather than any combination of Individual Coverage and Basic Crop Insurance.

Producers may return to Basic Crop Insurance, retaining established experience discounts, but switching back and forth is not usually permitted.

EVALUATING CROP INSURANCE DECISIONS

The preceding material dealt with the availability, organization and programs of crop insurance in Alberta. Technical features such as the good experience discount and coverage adjustments were illustrated, as were examples of claims and payout calculations. Understanding what crop insurance is and how it works is essential to making proper insurance decisions. But how does a producer determine whether he will buy crop insurance or not? What coverage level is needed? What price option should be selected? The following information will deal with approaches to evaluate crop insurance decisions.

COMPARING INSURANCE NEEDS WITH AVAILABLE INSURANCE

Earlier in the publication, Ben's neighbor Joe stated that crop insurance is expensive, that the area average yields are low, and the coverage is insufficient compared to the value of the potential crop loss. Joe would like to see coverage equal to crop production levels. Another way to view this is to say his objective is to have 100 per cent coverage on the crop. This means he would transfer all the production risk to the insurance company. As a result, the likelihood of a payout would be great. Since money for insurance indemnities is derived from pooled premiums, producers would have to pay high premium rates to generate sufficient funds for this level of coverage.

Another fact to keep in mind is that provincial crop insurance programs operate within the legislation of the federal Crop Insurance Act. This act states that the insurance programs must be based on area average yields, and coverage cannot exceed 80 per cent of these yields. Therefore the amount of coverage the corporation can provide is limited to this level. At the same time, premiums are lower to reflect the reduced amount of coverage. This condition relates to the insurance criteria stated earlier, that the probability of loss cannot be so high that it is not economical to insure it.

When a farmer grows a crop without insurance, the production risk is entirely his own. Purchasing crop insurance transfers at least a portion of the risk to the insurance company. The way the Corporation is required to work means that there is a maximum risk level the company can assume. Consequently, there is a **deductibility mechanism** built in that attempts to make the insurance economical to both the buyer and the seller. As a result, the amount of coverage available through crop insurance programs fully or partially covers the producer's cash operating expenses at a relatively minimal cost.

In order to illustrate these concepts, let's review the deductibility feature, how premiums relate to coverage levels and how coverage levels relate to production costs by using Ben's farm as an example.

CROP INSURANCE DEDUCTIBILITY

Ben's record of experience, (Figures 1 and 2)indicates that his premium will be reduced by 15 per cent and coverage will be increased by 20 per cent. Table 3 is a summary of his coverage and premiums including a further 15 per cent premium reduction for the farm's size.

Table 3. Ben's Adjusted Coverage Levels and Premiums

	Coverage bu/ac	Price Option	Coverage ($/ac)	Premium ($/ac)	Cost/$1 Coverage
60% Stubble Soil A	36.2	$1.96	$70.95	$1.42	2.00¢
		$2.61	$94.48	$1.88	1.99¢
70% Stubble Soil A	42.2	$1.96	$82.71	$2.51	3.04¢
		$2.61	$110.14	$3.34	3.03¢

Note: Premiums stated are the farmer portion only. They do not reflect the government share.

Table 3 shows that the premium cost could be as low as $1.42, or as high as $3.34, depending on the coverage and the price option selected. The amount of coverage in dollars per acre ranges from $70.95 to $110.14. While the dollar amount of coverage has increased by 55 per cent, the cost of the premium has more than doubled. The increase in the cost per dollar of coverage from two cents to three cents further illustrates this point. What is the reason for this?

As the amount of coverage increases, the amount of risk the farmer transfers to the insurance company becomes larger. Another way to view this is, the 70 per cent coverage level is like a 30 per cent deductible insurance plan. If the crop was destroyed, the farmer would cover the first 30 per cent of loss himself and the company would be required to pay the balance of the loss. A 60 per cent coverage level is like a 40 per cent deductible plan. As the deductibility becomes larger, the premium required decreases.

If Ben selects the low level of coverage, he is assuming the extra risk of the additional six bushels of barley production that could have been insured had the 70 per cent coverage level been taken. In other words, Ben will harvest 36.2 bu/ac or greater more often than he will 42.2 bu/ac or better. In return for the lower amount of risk transferred to the insurance company at the 60 per cent coverage level, the premium is reduced as Table 3 indicates.

PREMIUMS AND COVERAGE LEVELS

Another interesting feature Ben notices while comparing the dollar amount of coverage and premium rates in Table 3 is that the high price option at 60 per cent coverage will pay a greater indemnity per acre ($94.48/ac) than provided under the 70 per cent coverage low price option ($82.71/ac). Furthermore, the premium cost is lower ($1.88/ac vs. $2.51/ac). Why can he obtain more dollar coverage for a lower premium?

The answer to Ben's concern relates to the fact that there is less chance for a payout at 60 per cent coverage (36.2 bu/ac) than the 70 per cent coverage level (42.2 bu/ac). It is more likely his crop will yield at least 36.2 bu/ac than it will 42.2 bu/ac. Although the dollar amount of coverage is higher at the 60 per cent coverage level and high price option, the chance of receiving a payout is lower and therefore the premium is less.

COVERAGE LEVELS AND PRODUCTION COSTS

Understanding technical features of crop insurance will greatly assist producers in making crop insurance decisions. For others, further analysis is required. Another area to investigate would be cash margins and ultimately the ability of a farm business to withstand a reduction in cash flow due to crop loss or failure.

To illustrate this point, let's review the financial positions of Ben and Joe. Table 4 is a summary of cash costs and returns for production anticipated by the two farmers. For simplification purposes, the expenses are represented as the average cost per acre over the entire farm. The returns are based on barley production only.

Table 4. Comparison of Cash Costs and Returns Per Acre Before and After Harvest, Without Insurance

	Ben	Joe
Gross Return: 70 bu/ac @ $2.75/bu	**$192**	**$192**
DIRECT CASH COSTS: (pre-harvest)		
Seed	7	7
Fertilizer	25	25
Chemicals	15	15
Machinery Fuel and Oil	10	10
Cash Rent	15	--
Repairs and Maintenance	6	4
Land Taxes	4	4
Miscellaneous overheads	5	5
Interest on operating	5	2
Total Cash Costs before harvest	$92	$72
Harvest Cash Costs	13	13
Total Cash Costs after harvest	$105	$85
Interest and Principal on Land	30	--
Family and Operator Labor/Living	15	10
TOTAL CASH REQUIREMENTS	$150	$95
CASH MARGIN	$42	$97

Even though Ben and Joe have similar expectations about yields and prices, and they farm in a similar way, their financial obligations are very different. Ben requires an operating loan to meet some of his cropping expenses. Joe has sufficient funds to pay all of his cash costs, but will draw these from present savings. Ben has a loan on some of his land. Joe, on the other hand owns all of his. Furthermore, Ben cash-rents an additional parcel of land and has a larger living requirement because of his young family. As a result of these additional cash requirements, Ben's margin is less than Joe's.

As long as conditions are satisfactory to produce the necessary yields, and market prices and cropping expenses remain constant, both will be able to maintain their respective cash margins. How would a crop loss affect these margins and what implications would this have on their farm businesses?

A total crop failure to Ben and Joe could result in an income loss of $192 per acre, on the basis of 70 bushels of barley at $2.75 per bushel. Of immediate concern are the cash cropping expenses and the total cash requirements they need to maintain their financial stability. Table 4 shows that Ben has a total cash requirement of $150 per acre including harvest costs. As the crop has been destroyed, the harvest costs will not be incurred and the resulting cash requirement is $137 per acre. Over his 1000 acre farm, this represents a cash reduction of $137,000. Joe's reduced cash requirements of $82 per acre result in a less severe but still considerable $52,480 over his 640 acre farm.

The magnitude of these losses can be illustrated if one considers how many years of average production would be required to recover the cash expenses incurred. In Ben's case, with a cash margin of $42 per acre, it could take four years to recoup the $137 per acre loss. ($137 per acre ÷ $42 cash margin = 3.3 years or about 4 years of production). By comparison, Joe could recover his $82 per acre loss in one year of production, provided his cash margin remained at $97 per acre.

The extent of these losses could have been considerably reduced if the crops had been insured. Table 5 provides a summary of cashflows without insurance and each of the insurance options, in the event of a complete crop loss for Ben.

Table 5. Ben's Cashflow With and Without Insurance

	No Ins.	60% Low	60% Hi	70% Low	70% Hi
Cash Rqrd.	$150.00	$151.42	$151.88	$152.51	$153.34
less Harvest cost	13.00	13.00	13.00	13.00	13.00
Net Cash Rqrd.	137.00	138.42	138.88	139.59	140.34
Revenue from insurance	0.00	70.95	94.48	82.71	110.14
Net Cash Margin	-137.00	-67.74	-44.40	-56.88	-30.20

A review of the table above indicates that Ben's loss could be reduced by at least one-half with insurance. If Ben had insured at the highest level of coverage, he still would have incurred a loss, but this loss could be regained within one year of average production ($42/ac cash margin).

EVALUATING CROP INSURANCE DECISIONS ON A LONG TERM BASIS

As a result of the preceding calculations, Ben realizes that he would be in a very difficult financial position if he lost a crop. It would take a long time to recover his losses and possibly jeopardize his future in farming. Joe points out to him however, that entire crop losses are quite remote. In fact, he thinks the chances of barley yields falling below Ben's adjusted coverage levels of 36.2 or 42.2 bushels per acre are quite small.

What is the advantage of paying crop insurance premiums if there is little chance that yields will be lower than the coverage levels?

What are Ben's yields like? What is the probability of his producing a 20 bushel crop or 100 bushel crop? If Ben could develop a concept about the probability of achieving various yields, he may be able to determine if the insurance is worth buying.

DETERMINING PROBABILITIES

Probabilities indicate the chance of a particular event occurring such as achieving a certain yield per acre. Probabilities are represented by numbers between 0 and 1. If a probability is 0, it indicates that there is no chance of the event occurring. If it is 1, the event is certain to occur.

Estimating the probabilities of yields can be done in different ways. One method is to refer to a producer's past production records and use the actual results. The major problem with this method is that often too few years of data are available to provide statistically reliable information.

Another way is to mathematically estimate probabilities of yields based on the producer's estimates of the most likely yield, along with the highest and lowest possible yields. Probabilities derived in this manner are called "subjective probabilities".

Ben and Joe decide that in their situation, 70 bushels of barley is the most likely yield; the highest possible yield is 90 bu/ac; and the lowest possible yield is 10 bu/ac. The following table (Table 6) indicates the probabilities of yields occurring in the yield range indicated.

Table 6. Subjective Probabilities of Achieving Various Yields

Yield Increments	Subjective Probability	Estimate of No. of years yield will occur in 100 year period
10-19	.0188	2
20-29	.0604	6
30-39	.1021	10
40-49	.1438	14
50-59	.1854	19
60-69	.2271	23
70-79	.1938	19
80-89	.0688	7
		100

The above table provides Ben with an estimate of the probabilities of achieving various yields based on his own estimates. For example, the probability that the yield will be in the 60-69 bushel range is 0.22. In other words, Ben could expect this yield in 22.71 or 23 years of a 100-year period. The probability of a yield of 10-19 bu/ac is 0.0188. This means this yield would occur 2 years out of 100 years.

DETERMINING LONG TERM CASH MARGINS

Having established an estimate of the probabilities of achieving various yields, Ben can predict the long term average cash margin in the following way. Taking the mid-point of each range of yields, he multiplies the yield by the barley price and subtracts the production costs. This amount equals the cash margin for that particular yield. This figure is multiplied by the probability of that yield occurring. For example, if the yield range to be considered was 10 - 19 bushels per acre:

Mid-point is 14.5 bushels	
Value of production is 14.5 bu x $2.75 =	$ 39.875
less: Total costs per acre =	$150.00
Net cash margin =	$110.125
Probability of occurring from table	x .0188
Cash margin =	–$2.07

If Ben repeats this calculation for each mid-point and adds the values together, he can estimate the average cash margin barley will generate annually over the long term.

Table 7. Average Annual Cash Margin

Yield Increments	Mid-Pts.	Subjective Probability	Cash Margin
10-19	14.5	0.0188	–$2.07
20-29	24.5	0.0604	–$4.99
30-39	34.5	0.1021	–$5.62
40-49	44.4	0.1438	–$3.97
50-59	54.5	0.1854	–$0.02
60-69	64.5	0.2271	$6.21
70-79	74.5	0.1938	$10.63
80-89	84.5	0.0688	$ 5.66
AVERAGE ANNUAL CASH MARGIN			$5.83

This calculation shows that Ben could expect an average annual cash margin of $5.83 per acre.

An easier way to determine the annual average cash margin is to use the following formula:

FORMULA A

Where:

a = the lowest possible yield

m = the most likely yield

b = the highest possible yield

y = the expected yield $= \frac{a+m+b}{3}$

p = the market price per bushel

c = cash costs per acre

Annual Average Cash Margin $= (p \times y) - c$

EXAMPLE:

$a = 10$ bu/ac
$m = 70$ bu/ac
$b = 90$ bu/ac
$$y = \frac{10+70+90}{3} = 56.6667 \text{ bu/ac}$$
$p = \$2.75$/bu
$c = \$150$/ac

AVERAGE ANNUAL CASH MARGIN $= (p \times y) - c$
$= (\$2.75/\text{bu} \times 56.6667 \text{ bu/ac}) - \$150/\text{ac} = \$5.83/\text{ac}$

DETERMINING LONG TERM CASH MARGINS WITH INSURANCE

Ben realizes that if he were insured, the losses in years when his production fell below the coverage level would be offset to some extent with a payout. He knows as well that his cash costs will increase by the amount of the premium. Ben concludes he should make an estimate of the average annual cash margin, increasing the revenue by the amount of the indemnity when applicable and increasing the cash costs per acre by the premium. This calculation can be done by modifying the preceding formula that determined average cash margin to include the premium cost and revenue generated when yields fall below the stated coverage level. The following inputs are necessary to complete the calculation:

FORMULA B

Where:

a = the lowest possible yield
m = the most likely yield
b = the highest possible yield
y = the expected yield $= \frac{a+m+b}{3}$
p = the market price per bushel
c = cash costs per acre
i = the insurance premium per acre
A = the coverage level in bushels per acre
q = the price option per bushel

AVERAGE CASH MARGIN
$$= (p \times y) - (c + i) + q\left(\frac{(A-a)^3}{3(m-a)(b-a)}\right)$$

While this formula may look rather complicated, it is in fact quite simple. The left hand side, $(p \times y) - (c + i)$, determines the cash margin when cash costs are increased by the premium. The right hand side calculates the revenue capability of the insurance given the price option, the coverage level and the estimates of the highest, lowest and most likely yields.

If Ben selected the 60 per cent coverage low price option, the calculation would be as follows:

EXAMPLE:

$a = 10$ bu/ac
$m = 70$ bu/ac
$b = 90$ bu/ac
$$x = \frac{10+70+90}{3} = 56.7 \text{ bu/ac}$$
$p = \$2.75$/bu
$c = \$150$/ac
$i = \$1.42$ /ac (Table 3)
$A = 36.2$ bu/ac (Table 3)
$q = \$1.96$/bu (Table 3)

AVERAGE CASH MARGIN
$$= (p \times y) - (c + i) + q\left(\frac{(A-a)^3}{3(m-a)(b-a)}\right)$$

$$\text{A.C.M.} = (\$2.75 \times 56.7) - (\$150 + \$1.42) + \$1.96\left(\frac{(36.2-10)^3}{3(70-10)(90-10)}\right) = \$6.95/\text{ac}$$

The average cash margin of Ben's barley crop with 60 per cent coverage low price option is \$6.95 per acre. It exceeds the no-insurance cash margin (\$5.83/ac) by \$1.12 per acre. The calculation is repeated for each of the insurance options and the results are:

	Average Cash Margin per Acre
No Insurance	\$5.83
60% Low Price Option	\$6.95
60% High Price Option	\$7.30
70% Low Price Option	\$7.73
70% High Price Option	\$8.64

These results indicate that Ben's increased production costs through added premiums will be less than the potential revenue of crops and the amount of insurance payouts when yields fall below coverage levels. As each increasing insurance level returns a greater average cash margin, Ben would be advised to insure at the 70 per cent coverage high price option. It is important to stress that these results are based on calculations that contain many variables. If any of the variables change significantly the results could be quite different. For example, if the most likely yield were to be increased, the probability of yields falling below the coverage levels would be less. This in turn would diminish the value of the insurance, while the same premium rates would continue to be added to the total cash costs.

On the other hand, if Ben over-estimated his production ability, the value of the insurance could be higher than was calculated.

IS THE SAME INSURANCE COVERAGE LEVEL SUITABLE IN ALL SITUATIONS?

Joe wonders how crop insurance could affect his average cash margin. Because Joe has not been buying insurance, he will have to use the basic coverage level without adjustments for the calculations. The following is a summary of Joe's coverage levels and premium rates:

Table 8. Joe's Coverage Levels and Premiums

	Coverage bu/ac	Price Option	Coverage ($/ac)	Premium ($/ac)
60% Stubble				
Soil A	31.5	$1.96	$61.74	$1.90
		$2.61	$82.21	$2.50
70% Stubble				
Soil A	36.7	$1.96	$71.93	$3.35
		$2.61	$95.78	$4.45

Joe makes the same calculations as Ben in order to determine his average cash margin with and without insurance. In the calculations he uses 10,70 and 90 for the lowest possible, most likely, and highest possible yields. His cash costs are $95 per acre (Table 4) and the market price is still $2.75 per bushel. The above coverage levels and premium rates are used in the calculations.

The summary of Joe's average cash margins with and without insurance are as follows:

	Average Cash Margin
No insurance	$60.92
60% Low Price Option	$60.37
60% High Price Option	$60.22
70% Low Price Option	$60.13
70% High Price Option	$59.91

As would be expected, Joe has a much higher cash margin than Ben, owing to his lower cash requirement per acre (Table 4). In Joe's situation, however, the no-insurance average cash margin is greater than each of the average cash margins with insurance. In fact, as the insurance coverage levels become higher, the difference between the margins increases. This direction is contrary to Ben's calculations. What would be the reasons for the different results?

Two factors that have changed affect the results. Firstly, premiums are higher for Joe than they are for Ben. Secondly, the per bushel coverage level is lower. This means that the probability of yields falling below the coverage level stated will be less. The combination of higher premiums and lower coverage levels means that costs of production are increased, but the size of the payout and the chance of it occurring will be diminished. If Joe purchased crop insurance and developed a good risk rating, the average cash margin with insurance would become greater as coverage levels increased and premiums were discounted. It is important to note that the average cash margin for the 60 per cent coverage low-price option is just slightly below Joe's cash margin without insurance. The decision to buy crop insurance will be determined by the way Joe considers the reduced average cash margin that the insurance may cause, and the potential loss a crop failure could represent. As the difference between the cash margins with and without insurance is relatively small, it would seem reasonable for him to buy the 60 per cent coverage low price option, as it will return the highest average cash margin of the insurance options available given the present conditions. This decision is a compromise between the reduced cash margin in the long term with insurance, and the loss that a crop failure could represent in the short term.

As a result of these calculations, it is evident that Ben and Joe have different insurance decisions to make. These examples illustrate crop insurance decisions that are suitable for one farmer, but will not necessarily meet the needs of another.

CROP INSURANCE DECISIONS WHEN COVERAGE IS REDUCED

The Basic Crop Insurance Program is designed to reflect a producer's cropping experience. The coverage is increased and premiums discounted with good experience. When a crop loss is incurred, a policyholder falls back one step at a time in the coverage adjustment schedule (Figure 2 B), unless two loss years in the latest three years of insurance occur. In this case, the rate a policyholder moves back is dependent upon the producer's loss-to-premium ratio (Figure 2 D). For further details, refer again to Coverage Adjustments page 7.

Three important factors must be considered when the coverage falls and the premiums move back. These are:

* As the per bushel coverage decreases, the chance of producing a yield below the reduced coverage level diminishes. This in turn means the probability of a payout being triggered is less.
* The dollar coverage per acre (price option x coverage level) is reduced because the bushel coverage level is diminished. As a result, the payout will be smaller when it is made.
* The premium rate remains at the basic level, while the coverage drops. Consequently the cost per dollar of insurance increases.

When coverage is reduced the long term average cash margin with insurance diminishes when compared to the margin without insurance as a result of these three factors. The following table demonstrates these concepts for Ben's situation if his coverage was 20 per cent below basic and premiums were at basic.

Table 9. Ben's Long Term Average Cash Margin, With and Without Insurance at 20% Below Coverage, Premium at Basic.

	Coverage (bu/ac)	Price Option ($/bu)	Premium ($/ac)	Cost/$ Coverage	Ave. Cash Margin ($/ac/yr)
60% Low	25.2	1.96	1.90	3.85¢	4.41
60% High	25.2	2.61	2.50	3.80¢	3.97
70% Low	29.4	1.96	3.35	5.81¢	3.48
70% High	29.4	2.61	4.45	5.80¢	2.71
		WITHOUT INSURANCE:			5.83

Once again the yield is 10, 70, and 90 bushels per acre for the lowest, most likely and highest possible yields. The per acre cash requirement is $150 per acre and the market price is $2.75 per bushel.

A comparison of this table with Table 3, where Ben had increased coverage adjustment and reduced premiums, shows that the coverage in bushels per acre has dropped more than 10 bushels per acre. As the dollar amount of coverage is based on the bushel coverage, it is evident that the dollar coverage is reduced as well. The premium rates are higher in Table 9, because they have moved to the basic rate. The increased cost per dollar of coverage is indicated as well. As a result of these factors, the long term average cash margin with any of the insurance choices is less than without insurance.

Of the four insurance choices, the 60 per cent coverage low price option gives the highest average cash margin. This result can be attributed to two factors. One is the reduced cost of insurance per dollar of coverage. The other is that the premium cost in years when the insurance is not needed is the least of the insurance option premiums. The 70 per cent coverage high-price option will reduce the losses to the greatest extent, however, if yields fall below the insurable level. If Ben were to lose his crop next year, the best decision would have been to have the most insurance possible to minimize the losses. The analysis indicates, however, that in the long term the cost of the insurance will be much greater than its net benefit.

Do these results mean Ben should not buy insurance?

Producers in a reduced coverage situation are faced with difficult crop insurance decisions. Being in a reduced coverage position indicates that the producer has likely experienced unfavorable production conditions. Therefore the need for the insurance has been established. As a result of the analysis summarized in Table 9, it appears that any of the insurance choices will likely reduce the profit potential of the farm in the long term. The decision not to buy insurance means that the producer will carry all of the production risk. Whether this is the best decision or not will depend upon the conditions the farmer will encounter.

The important factor to keep in mind is that a producer must survive in the short term in order to even consider the long term implications. If the decision not to insure jeopardizes the farm's future, even if the chance of a crop failure is remote, it would seem unreasonable to take that chance. The decision to insure is simply reducing the farm's profitability; it is not putting the whole business on the line.

EXTENDING CROP INSURANCE WITH THE HAIL ENDORSEMENT

When producers make their Basic Crop Insurance Policy decisions, they are determining the coverage available for the Hail Endorsement Program. The reason is that the bushel amount of coverage per acre provided by the Hail Endorsement is the same as under the Basic Crop Insurance Policy after coverage adjustments. If a producer considers hail to be a major risk, it may be to his advantage to select the 70 per cent coverage level, even though this level could represent a lower average cash margin than the 60 per cent coverage level. Similarly it would seem reasonable to select the high price option in order to gain a greater dollar amount of coverage per acre.

Remember that the premium is based on the hail premium rate and the dollar amount of coverage selected. As the dollar coverage increases, so does the premium rate.

The decision whether to purchase the Hail Endorsement relates directly to a producer's concept of the threat of hail. It is very difficult if not impossible for producers to predict if they will get hail in any given year and how it will affect their yields. Because hail claims are settled on a "spot-loss" basis, the matter of receiving a payout depends strictly upon the amount of damage a hail storm causes, expressed as a percentage of the coverage of a policyholder. This is unlike the Basic Crop Insurance Program where indemnities are based on the average production of the entire crop. It is for these reasons that development of a formula, such as the one used to analyze Basic Crop Insurance Policy decisions, would be very difficult.

Producers making Hail Endorsement decisions would be advised to review their per acre cash requirement and determine how losses of 10, 25, 50, 75 or even 100 per cent would affect their financial situation. If a producer believes losses would have a serious impact on the business and believe hail is an annual threat, it would seem reasonable that a decision to purchase the Hail Endorsement be made. Refer to sections dealing with the Hail Endorsement and Hail Insurance, pages 11 and 12, for details about these programs.

It is interesting to note as well that additional coverage for hail can be purchased from the Alberta Hail and Crop Insurance Corporation or other insurance companies if desired. This further option permits producers to ensure the full value of a crop or even more than its value in some cases. Premiums for straight hail insurance are based on a percentage of the coverage and the extent of any deductibility clause written into the contract. The percentage rate is determined using historical records indicating the frequency of hail damage.

SUMMARY

There is no single right answer to the question "Should I buy crop insurance?" There is a process however, which can assist a producer in making a decision. This publication has been prepared in order to provide information about insurance programs, the way they work and methods of analyzing crop insurance decisions. A summary of highlights are:

1. Keep informed about crop insurance. The program is subject to change from year to year both in crops covered and options available. For example, the list of insurable crops has steadily grown and crops such as hay and pasture, and winter wheat are insurable in many areas of the province.

   As the basic coverage levels are determined by running average yields of crops grown in the risk areas, the coverage levels will move up and down to reflect the cropping experience. Price options can also change from year to year in response to fluctuating market conditions. As these factors change, so will premium rates. Producers should keep tab on these changes in order to assess the general gains or reductions in the overall insurance program.

2. Be familiar with adjustment schedules. Coverage and premiums for individual producers can be significantly altered from the basic coverage levels. Producers should be aware of their adjusted coverage, the coverage options available and the respective premiums before making any insurance decisions.

3. Develop a concept about the financial well-being of the farm business. Answer questions such as: What are the cash operating costs? What is the margin between expected income and total cash requirements? Could the farm business survive financially if a significant crop loss was encountered? How long would it take to recover from the loss with and without insurance?

4. Develop an understanding of the relationship between your production ability and the coverage available to you. Pick the lowest, most likely, and highest possible yields and divide the total by three to determine your long term average yield. Compare the result with the insurance coverage levels. Remember that insurance programs provide 60 and 70 per cent coverage on area average yields before adjustments.

5. Use crop insurance for its intended purpose. Crop insurance is designed to cover at least part of the cash operating expenses. It is not intended to be a guaranteed income plan. If it doesn't meet income needs, producers may have to re-evaluate some other aspects of their business in order to safeguard their financial position. A self-insurance scheme might be a suitable addition to augment the Basic Crop Insurance Policy.

6. Maintain records of your production. Not only would this data be useful in order to compare the farm's yields to the Corporation's area average yields, but they also could be used to establish coverage levels if the Individual Coverage Option was selected.

7. When producers buy crop insurance, they are purchasing more than the insurance itself. There are 53 district offices of Alberta Hail and Crop Insurance Corporation across the province, with staff prepared to assist producers with crop insurance concerns. If you have any questions about the programs or making claims, be sure to contact your district office.

8. Worksheets are provided to enable you to make your own analysis to average cash margins with and without insurance. Computer programs that make these calculations can be accessed by contacting the Farm Business Management Branch. A printout example is provided (Appendix A), to show the results for Ben's farm barley, at basic coverage.

Production risks vary considerably between farm businesses because they are in different financial positions, operate with different margins, produce many crops in various ways and are subject to different climatic conditions. Farm managers vary with respect to the amount of risk they are prepared to carry and as a result they view the need for insurance differently. Furthermore, no one can tell others what risks they should or should not take. Managers must make their own decisions after analyzing their own circumstances.

WORKSHEET 1

CASH RETURNS AND COSTS PER ACRE, BEFORE AND AFTER HARVEST, WITHOUT INSURANCE FOR INDIVIDUAL CROPS

CROP:			
YIELD: bu /ac			
MARKET PRICE: $ / bu			
GROSS REVENUE: $ / ac (A)			
DIRECT CASH COSTS: $ / acre SEED			
FERTILIZER			
CHEMICALS			
MACHINERY FUEL AND OIL			
CASH RENT			
REPAIRS AND MAINTENANCE			
LAND TAXES			
MISCELLANEOUS OVERHEADS			
INTEREST ON OPERATING			
TOTAL CASH COSTS BEFORE HARVEST (B)			
HARVEST CASH COSTS			
TOTAL CASH COSTS AFTER HARVEST (C)			
INTEREST AND PRINCIPAL ON LAND			
FAMILY AND OPERATOR LABOR / LIVING			
TOTAL CASH REQUIREMENTS (D)			
CASH MARGIN (A-D) = $ / ac	$ ________ / ac	$ ________ / ac	$ ________ / ac

WORKSHEET 2

CROP: ______________________________

AVERAGE CASH MARGIN WITHOUT INSURANCE:

Lowest possible yield = (a) = ____________ bu / ac

Most likely yield = (m) = ____________ bu / ac

Highest possible yield = (b) = ____________ bu / ac

Market price = (p) = ____________ \$ / bu

Cash requirement per acre = (c) = ____________ \$ / ac

Expected yield = (y) = $\frac{a + m + b}{3} = \frac{\_\_\_\_ + \_\_\_\_ + \_\_\_\_}{3} = \_\_\_\_\_\_$ bu / ac

AVERAGE CASH MARGIN WITHOUT INSURANCE = $(p \times y) - c$

$(\_\_\_\_\_\_ \times \_\_\_\_\_\_) - \_\_\_\_\_\_\_\_ = \_\_\_\_\_\_$ \$ / ac

AVERAGE CASH MARGIN WITH 60 % COVERAGE - LOW PRICE OPTION:

Insurance premium / acre = (i) = ____________ \$ / ac

Insurance coverage level (bushel / acre) = (A) = ____________ bu / ac

Price option (dollars / bushel) = (q) = ____________ \$ / bu

AVERAGE CASH MARGIN WITH INSURANCE =

$$(p \times y) - (c + i) + q\left(\frac{(A - a)^3}{3\,(m - a)\,(b - a)}\right)$$

$$(\_\_\_ \times \_\_\_) - (\_\_\_ + \_\_\_) + \_\_\_\_ \left(\frac{(\_\_\_\_ - \_\_\_\_)^3}{3\,(\_\_\_\_ - \_\_\_\_)\,(\_\_\_\_ - \_\_\_\_)}\right)$$

= ____________ \$ / acre

AVERAGE CASH MARGIN WITH 60 % COVERAGE - HIGH PRICE OPTION:

Insurance premium / acre = (i) = __________ $ / ac

Insurance coverage level (bushel / acre) = (A) = __________ bu / ac

Price option (dollars / bushel) = (q) = __________ $ / bu

AVERAGE CASH MARGIN WITH INSURANCE =

$$(p \times y) - (c + i) + q\left(\frac{(A - a)^3}{3(m - a)(b - a)}\right)$$

$$(\underline{\qquad} \times \underline{\qquad}) - (\underline{\qquad} + \underline{\qquad}) + \underline{\qquad}\left(\frac{(\underline{\qquad} - \underline{\qquad})^3}{3(\underline{\qquad} - \underline{\qquad})(\underline{\qquad} - \underline{\qquad})}\right)$$

= __________ $ / acre

AVERAGE CASH MARGIN WITH 70 % COVERAGE - LOW PRICE OPTION:

Insurance premium / acre = (i) = __________ $ / ac

Insurance coverage level (bushel / acre) = (A) = __________ bu / ac

Price option (dollars / bushel) = (q) = __________ $ / bu

AVERAGE CASH MARGIN WITH INSURANCE =

$$(p \times y) - (c + i) + q\left(\frac{(A - a)^3}{3(m - a)(b - a)}\right)$$

$$(\underline{\qquad} \times \underline{\qquad}) - (\underline{\qquad} + \underline{\qquad}) + \underline{\qquad}\left(\frac{(\underline{\qquad} - \underline{\qquad})^3}{3(\underline{\qquad} - \underline{\qquad})(\underline{\qquad} - \underline{\qquad})}\right)$$

= __________ $ / acre

AVERAGE CASH MARGIN WITH 70 % COVERAGE - HIGH PRICE OPTION:

Insurance premium / acre = (i) = __________ $ / ac

Insurance coverage level (bushel / acre) = (A) = __________ bu / ac

Price option (dollars / bushel) = (q) = __________ $ / bu

AVERAGE CASH MARGIN WITH INSURANCE =

$$(p \times y) - (c + i) + q\left(\frac{(A - a)^3}{3(m - a)(b - a)}\right)$$

$$(\underline{\qquad} \times \underline{\qquad}) - (\underline{\qquad} + \underline{\qquad}) + \underline{\qquad}\left(\frac{(\underline{\qquad} - \underline{\qquad})^3}{3(\underline{\qquad} - \underline{\qquad})(\underline{\qquad} - \underline{\qquad})}\right)$$

= __________ $ / acre

APPENDIX A

SAMPLE: BEN, BASIC COVERAGE - BARLEY

EVALUATING CROP INSURANCE

	LOWEST POSSIBLE	MOST LIKELY	HIGHEST POSSIBLE
YIELD (bushels/acre)	10	70	90
PRICE/bushel	$2.25	$2.75	$3.00

YIELD INCREMENT (in bu.) ----------> 5
YOUR CASH REQUIREMENT/acre --------> $150.00

	COVERAGE LEVEL (in bushels)	PRICE OPTION (hi/lo)	$/ACRE COVERAGE	INSURANCE PREMIUM (per acre)	COST/1$ COVERAGE
60% LOW PRICE	31.5	$1.96	$61.74	$1.90	$0.0308
60% HIGH PRICE	31.5	$2.61	$82.22	$2.50	$0.0304
70% LOW PRICE	36.7	$1.96	$71.93	$3.35	$0.0466
70% HIGH PRICE	36.7	$2.61	$95.79	$4.45	$0.0465

TABLE 1: AVERAGE LONG TERM CASH MARGIN

	LOWEST POSSIBLE PRICE	MOST LIKELY PRICE	HIGHEST POSSIBLE PRICE
NO INSURANCE	($22.50)	$5.83	$20.00
60% LOW PRICE	($23.05)	$5.29	$19.45
60% HIGH PRICE	($23.20)	$5.13	$19.30
70% LOW PRICE	($23.26)	$5.07	$19.24
70% HIGH PRICE	($23.50)	$4.83	$19.00

TABLE 2: NET CASH MARGIN WITH & WITHOUT INSURANCE
AT LOWEST POSSIBLE PRICE OF $2.25

YIELD (in bu.)	NO INSURANCE	60% LOW	60% HIGH	70% LOW	70% HIGH
10	($127.50)	($87.26)	($73.89)	($78.52)	($62.26)
15	($116.25)	($85.81)	($75.69)	($77.07)	($64.06)
20	($105.00)	($84.36)	($77.49)	($75.62)	($65.86)
25	($93.75)	($82.91)	($79.29)	($74.17)	($67.66)
30	($82.50)	($81.46)	($81.09)	($72.72)	($69.46)
35	($71.25)	($73.15)	($73.75)	($71.27)	($71.26)
40	($60.00)	($61.90)	($62.50)	($63.35)	($64.45)
45	($48.75)	($50.65)	($51.25)	($52.10)	($53.20)
50	($37.50)	($39.40)	($40.00)	($40.85)	($41.95)
55	($26.25)	($28.15)	($28.75)	($29.60)	($30.70)
60	($15.00)	($16.90)	($17.50)	($18.35)	($19.45)
65	($3.75)	($5.65)	($6.25)	($7.10)	($8.20)
70	$7.50	$5.60	$5.00	$4.15	$3.05
75	$18.75	$16.85	$16.25	$15.40	$14.30
80	$30.00	$28.10	$27.50	$26.65	$25.55
85	$41.25	$39.35	$38.75	$37.90	$36.80
90	$52.50	$50.60	$50.00	$49.15	$48.05

TABLE 3: NET CASH MARGIN WITH & WITHOUT INSURANCE
AT MOST LIKELY PRICE OF $2.75

YIELD (in bu.)	NO INSURANCE	60% LOW	60% HIGH	70% LOW	70% HIGH
10	($122.50)	($82.26)	($68.89)	($73.52)	($57.26)
15	($108.75)	($78.31)	($68.19)	($69.57)	($56.56)
20	($95.00)	($74.36)	($67.49)	($65.62)	($55.86)
25	($81.25)	($70.41)	($66.79)	($61.67)	($55.16)
30	($67.50)	($66.46)	($66.09)	($57.72)	($54.46)
35	($53.75)	($55.65)	($56.25)	($53.77)	($53.76)
40	($40.00)	($41.90)	($42.50)	($43.35)	($44.45)
45	($26.25)	($28.15)	($28.75)	($29.60)	($30.70)
50	($12.50)	($14.40)	($15.00)	($15.85)	($16.95)
55	$1.25	($0.65)	($1.25)	($2.10)	($3.20)
60	$15.00	$13.10	$12.50	$11.65	$10.55
65	$28.75	$26.85	$26.25	$25.40	$24.30
70	$42.50	$40.60	$40.00	$39.15	$38.05
75	$56.25	$54.35	$53.75	$52.90	$51.80
80	$70.00	$68.10	$67.50	$66.65	$65.55
85	$83.75	$81.85	$81.25	$80.40	$79.30
90	$97.50	$95.60	$95.00	$94.15	$93.05

TABLE 4: NET CASH MARGIN WITH & WITHOUT INSURANCE
AT HIGHEST POSSIBLE PRICE OF $3.00

YIELD (in bu.)	NO INSURANCE	60% LOW	60% HIGH	70% LOW	70% HIGH
10	($120.00)	($79.76)	($66.39)	($71.02)	($54.76)
15	($105.00)	($74.56)	($64.44)	($65.82)	($52.81)
20	($90.00)	($69.36)	($62.49)	($60.62)	($50.86)
25	($75.00)	($64.16)	($60.54)	($55.42)	($48.91)
30	($60.00)	($58.96)	($58.59)	($50.22)	($46.96)
35	($45.00)	($46.90)	($47.50)	($45.02)	($45.01)
40	($30.00)	($31.90)	($32.50)	($33.35)	($34.45)
45	($15.00)	($16.90)	($17.50)	($18.35)	($19.45)
50	$0.00	($1.90)	($2.50)	($3.35)	($4.45)
55	$15.00	$13.10	$12.50	$11.65	$10.55
60	$30.00	$28.10	$27.50	$26.65	$25.55
65	$45.00	$43.10	$42.50	$41.65	$40.55
70	$60.00	$58.10	$57.50	$56.65	$55.55
75	$75.00	$73.10	$72.50	$71.65	$70.55
80	$90.00	$88.10	$87.50	$86.65	$85.55
85	$105.00	$103.10	$102.50	$101.65	$100.55
90	$120.00	$118.10	$117.50	$116.65	$115.55

APPENDIX B

IMPORTANT CROP INSURANCE DATES

March 31	- Deadline for cancellation of crop insurance policies - Deadline for applying for hay and pasture insurance
April 30	- Deadline for application and changes in insurance (crops, price option, and coverage levels) and election of Hail Endorsement and Unseeded Acreage Coverage.
May 15	- Policies with unpaid premiums are cancelled by the Corporation on this date.
June 10	- Last day for cancelling Hail Endorsement on fall rye and winter wheat without premium charge.
June 20	- Report of Seeded Crops for spring-sown crops should be filed by this date. Acreage seeded after this date not insurable.
June 21	- Stage 11 pre-harvest adjustment (100% of coverage) commences for fall-sown crops. - Reports of Seeded Crops filed this date or later are subject to penalty.
June 23	- Deadline for claiming on Unseeded Acreage.
June 25	- Last day for free cancellation of Hail Endorsement, except for fall rye and winter wheat.
June 30	- Last day for accepting Report of Seeded Crops.
July 1	- Stage 11 pre-harvest adjustment (100% of coverage) commences.
Aug 31	- Final day for electing insurance on fall rye and winter wheat, and Hail Endorsement on these crops.
Sept 1	- Commencing this date, interest added each month to unpaid accounts at the rate of 1.5% per month (18% per annum).
Sept 15	- Final seeding date on which liability can be accepted on fall rye north of Bow River.
Sept 20	- Final seeding date on which liability can be accepted on winter wheat.
Sept 30	- Final seeding date on which liability can be accepted on fall rye seeded south of the Bow River. (Report of Seeded Crops for Fall-Sown Crops to be filed within 10 days of completion of seeding of these crops).
Oct 15	- Hail Endorsement expires at midnight.
Oct 31	- Deadline for applying for Individual Coverage.
Nov 30	- Unharvested acreage must be reported. All claims for production shortage must have been filed by this date.

APPENDIX C

DISTRICT OFFICES OF ALBERTA HAIL AND CROP INSURANCE CORPORATION

Region #1

Cardston*	653-3022
Pincher Creek #	627-3818
Claresholm	625-3534
Warner	642-3887
Lethbridge	329-5240
Vulcan	485-2766
Taber	223-3470
Brooks*	362-5758
Foremost	867-3666
Medicine Hat	529-3600

Region #2

High River	652-3232
Calgary	276-3740
Didsbury	335-3611
Strathmore	934-3616
Three Hills	443-5503
Morrin	772-3844
Hanna	854-4202
Oyen	664-3677

Region #4

Red Deer	340-5379
Lacombe	782-6800
Ponoka	783-5309
Wetaskiwin	352-1244
Stettler	742-5003
Camrose	672-7606
Castor	882-3770
Sedgewick	384-3880

Region #5

Ryley	663-3686
Lamont	895-2266
Smoky Lake #	656-3644
Vegreville	632-3660
Two Hills	657-2585
Provost	753-2150
Wainwright*	842-3622
Kitscoty	846-2331
St. Paul #	645-6221
Bonnyville*	826-2292

Region #6

Evansburg*	727-3959
Sangudo	785-3320
Barrhead	674-3392
Westlock	349-4544
Leduc	986-4088
Morinville	939-4863
Thorhild	398-3933
Athabasca	675-4007

Region #7

Grande Prairie	538-5355
Spirit River	864-3896
Valleyview*	524-3838
High Prairie #	523-4561
Falher	837-2521
Fairview	835-2703
Grimshaw	332-4494
Manning	836-3573
Fort Vermilion*	927-4209

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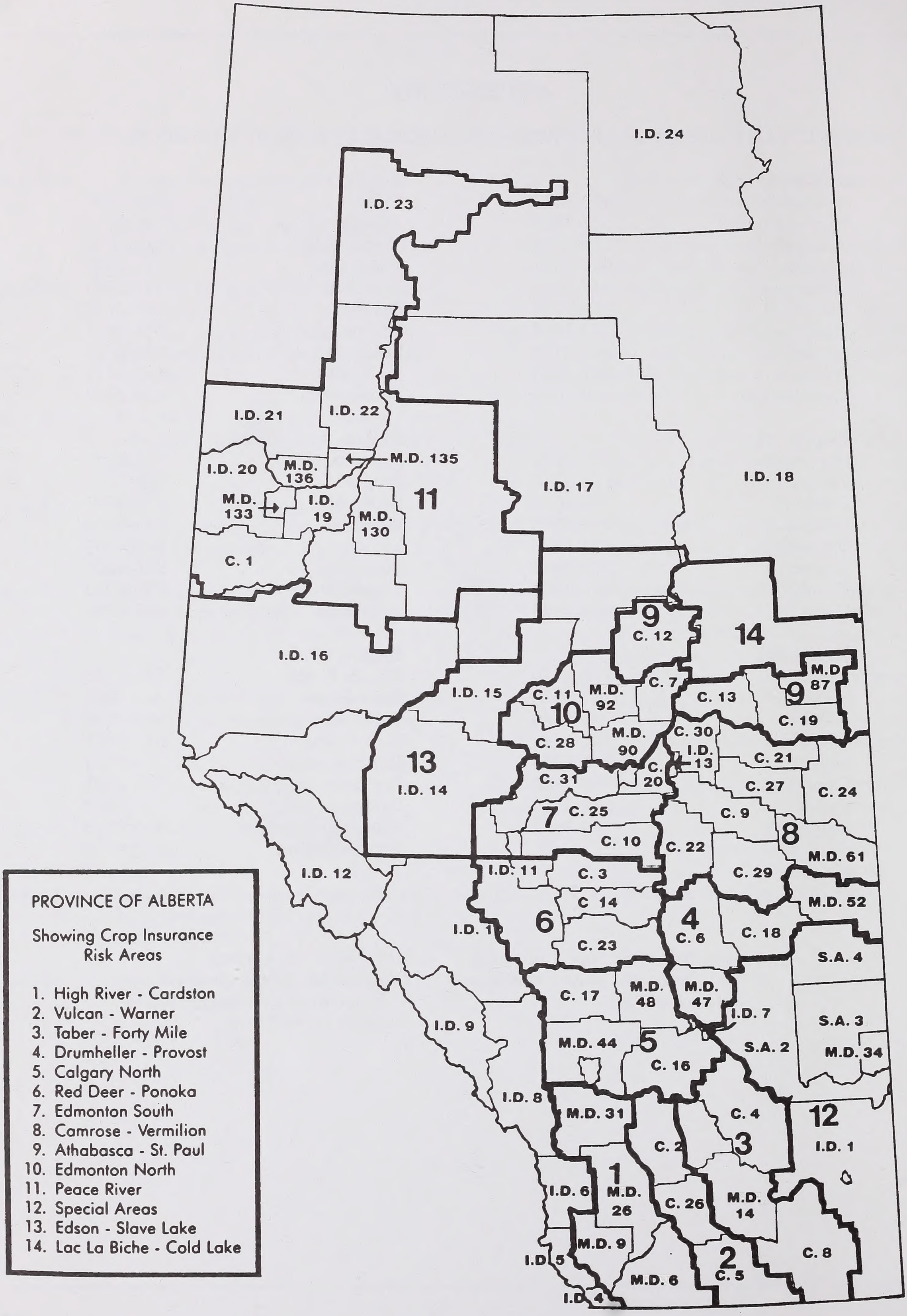
* open half days only - mornings	8:15 a.m. to 12:00 noon
# open half days only - afternoons	12:45 p.m. to 4:30 p.m.
full day offices	8:15 a.m. to 12:00 noon 1:00 p.m. to 4:30 p.m.

APPENDIX D


PROVINCE OF ALBERTA
Showing Crop Insurance Risk Areas
1. High River - Cardston
2. Vulcan - Warner
3. Taber - Forty Mile
4. Drumheller - Provost
5. Calgary North
6. Red Deer - Ponoka
7. Edmonton South
8. Camrose - Vermilion
9. Athabasca - St. Paul
10. Edmonton North
11. Peace River
12. Special Areas
13. Edson - Slave Lake
14. Lac La Biche - Cold Lake
I.D. 24
I.D. 23
I.D. 21
I.D. 22
M.D. 135
I.D. 20
M.D. 136
M.D. 133
I.D. 19
M.D. 130
11
I.D. 17
I.D. 18
C. 1
I.D. 16
9
C. 12
14
M.D 87
9
C. 19
C. 7
C. 13
I.D. 15
C. 11
10
M.D. 92
M.D. 90
C. 28
C. 30
I.D. 13
C. 21
C. 20
13
I.D. 14
C. 31
C. 27
C. 24
7
C. 25
C. 9
8
C. 10
C. 22
M.D. 61
I.D. 12
I.D. 11
C. 3
C. 29
C 14
4
M.D. 52
I.D. 10
6
C. 6
C. 18
C. 23
S.A. 4
C. 17
M.D. 48
M.D. 47
I.D. 7
S.A. 3
I.D. 9
M.D. 44
5
S.A. 2
M.D. 34
C. 16
I.D. 8
M.D. 31
C. 4
12
C. 2
3
I.D. 1
1
I.D. 6
M.D. 26
C. 26
M.D. 14
M.D. 9
2
C. 8
I.D. 5
M.D. 6
C. 5
I.D. 4

N.L.C. - B.N.C.
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